

CLAIMS

1. A method for making a methacrylate unit-containing polymer with a polydispersity <1.7 and containing at least one cross-linkable
5 functional group comprising a step of radically polymerizing a mixture of ethylenically unsaturated monomers comprising at least 50 mole% of methacrylate monomers to a polymer in the presence of a) a radical precursor and b) I₂ or a sulfonyl iodide.
- 10 2. The method according to claim 1 wherein the sulfonyl iodide is an aromatic sulfonyl iodide, preferably p-toluenesulfonyl iodide.
- 15 3. The method according to claim 1 or 2 wherein the temperature during the polymerization step is lower than 130°C, preferably lower than 110°C, even more preferably lower than 90°C, and most preferably lower than 70°C.
- 20 4. The method according to any one of claims 1-3 wherein the mole ratio sulfonyl iodide : radical precursor is >0.1n, or wherein the mole ratio I₂ : radical precursor is between 0.05n and 0.5n, wherein n stands for the number of radicals effectively generated per molecule of radical precursor.
- 25 5. The method according to any one of claims 1-4 wherein the polymerization is performed in the presence of an epoxide-containing compound.
6. The method according to claim 5 wherein the mole ratio epoxide : iodine atom is at least 0.01.

7. The method according to claim 6 wherein the mole ratio epoxide : iodine atom is at least 0.05.
8. The method according to any one of claims 1-7 for making a block or 5 gradient copolymer.
9. The method according to any one of claims 1-8 wherein the polymer is further reacted with the iodine atom being removed, preferably by nucleophilic reaction, by heating and/or by reaction with a radical 10 generating compound, optionally under reducing conditions.
10. Use of the polymer obtained according to any one of claims 1-9 in a cross-linkable composition for making a polymeric network, preferably a film-forming composition, more preferably a coating composition, adhesive or ink formulation, most preferably an 15 automotive OEM or repair coating or an industrial coating composition.
11. Use of the polymer obtained according to any one of claims 1-9 in a 20 further polymerization process.